

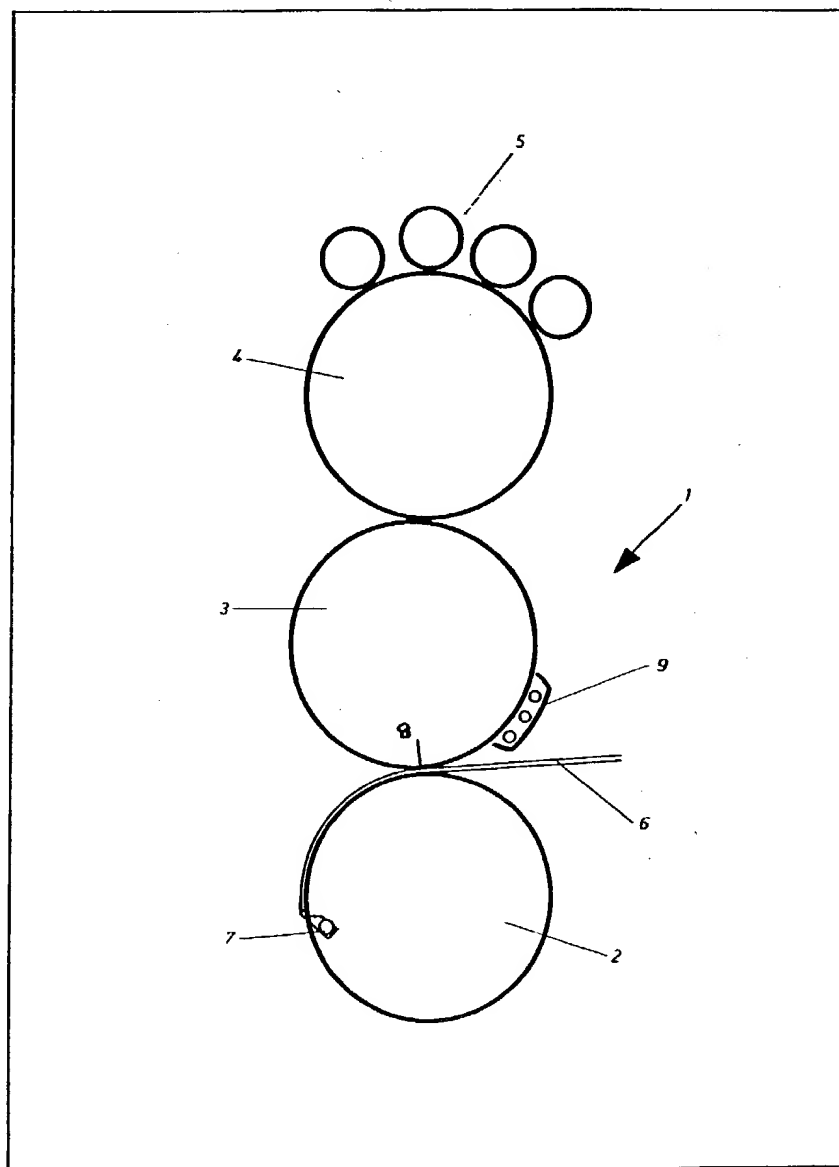
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(71) Applicants  
M.A.N.-Roland  
Druckmaschinen AG.,  
Christian-Pless-Strasse  
6-30,  
6050 Offenbach am Main,  
Germany.  
(72) Inventors  
Claus Simeth  
(74) Agents  
Gallafent & Co.,  
8, Staple Inn,  
London, WC1V 7QH.

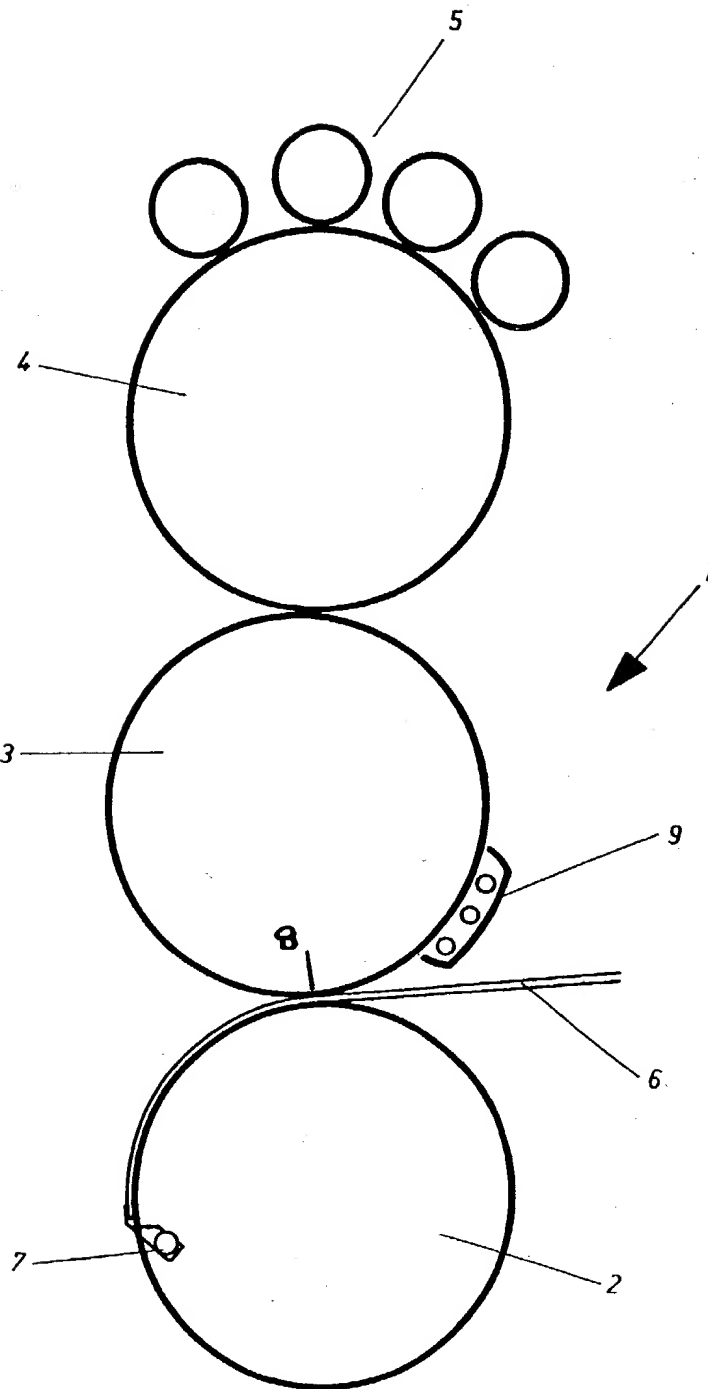
(54) Printing unit with heater for  
reducing register differences on  
startup

(57) An arrangement in a printing unit  
(1) for reducing or preventing register

differences when starting a printing  
press has a heating device (9) arranged  
just upstream of the point of contact  
between an impression cylinder (2) and  
a blanket cylinder (3) and at a small  
distance from the blanket cylinder sur-  
face. The heating device preferably ex-  
tends over the entire width of the  
blanket cylinder (3), and can be switch-  
ed on and off momentarily by auto-  
matic control.



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## SPECIFICATION

**Printing unit with heater for reducing register differences on startup.**

5 This invention relates to an arrangement for prevention of register differences when starting printing presses with thermostatically controlled heaters, which can be switched on and off, for control of the

10 printing ink temperature.  
It has been found that differences in register may occur when starting the press due to the different pulling conditions between the paper and rubber blanket. These differing pulling conditions are  
15 caused by the damping solution and by the ink. Particularly cold inks exert undue tension on the paper as the printed sheet is removed from the blanket cylinder. Consequently, at the start of printing, the printer must produce waste sheets or  
20 subsequently adjust the register by hand. After a short press operating time these undesirable phenomena disappear again, because the viscosity of the printing ink is changed by the friction between the rollers.

25 The effect of the ink viscosity on accurate register in the gap between the blanket cylinder and impression cylinder is already known from German Patent Specification 2017417. However, the envisaged measures produce an unsatisfactory result and cannot be  
30 used even during starting.

To bring the viscosity of the printing ink to a favourable value for the printing process as soon as printing is started, German Patent Specification 1179225 describes an arrangement which incorporates a heating tube, which can be swung away from  
35 an ink roller after the ink film on the latter reaches a specific temperature. The ink film temperature is monitored and the tube swung away by thermostat control. However, a disadvantage of this arrangement is that it is designed to heat the entire ink flow,  
40 which then leads to scumming during application to the printing plate. These arrangements operate too slowly for momentary heating, for the time taken to print about 500 sheets.

45 According to the present invention there is provided a printing unit having an impression cylinder and a blanket cylinder and, in order to reduce register differences when starting printing, at least one thermostatically controlled heater, which can be  
50 switched on and off, for control of the printing ink temperature, located a short way above the surface of the blanket cylinder and just upstream of the point of contact between the impression cylinder and blanket cylinder and automatic control means  
55 adapted to switch the heaters on and off for short time periods.

Such an arrangement enables the temperature of the printing ink to be controlled in such a way that when the press is started no differences in register  
60 occur when the printed sheet is removed from the blanket cylinder.

The advantage of this new arrangement stems from the installation of the heater directly above the surface of the blanket cylinder, just before the rubber  
65 blanket reaches the printing zone where its surface

contacts the paper or the like which is held against the impression cylinder. Consequently only the thin ink/water film to be applied to the paper is heated. The momentary operation of the heater and the possibility of a partial change in the heating temperature enable the temperature of the ink/water film on the blanket cylinder to be adapted to the printed image using substantially less energy.

70 The invention is illustrated by way of example with reference to the accompanying drawing which is a schematic representation of a printing unit with heaters above the surface of the blanket cylinder.

Referring to the drawing, a printing unit generally designated 1 consists of three cylinders, an impression cylinder 2, a blanket cylinder 3 and a plate cylinder 4, to which an inking and damping unit 5 is connected. In operation of the unit, sheets 6 are held by cylinder grippers 7 and, lying on impression cylinder 2, are guided through the contact zone 8  
85 between blanket cylinder 3 and impression cylinder 2. Heaters 9 are arranged above the surface of blanket cylinder 3 immediately upstream of the contact zone 8. These heaters 9 extend over the width of the blanket cylinder 3 and are partially  
90 subdivided. The temperature of the printing ink on the blanket cylinder can then be controlled accurately according to the printed image. If several printing units are arranged sequentially, the temperature control in the individual printing units can be varied  
95 in relation to each other, so that the corresponding ink/water tension can be adjusted according to requirements. The momentary automatic connection and disconnection of the heaters can be achieved by a time switch of known design.

## 100 CLAIMS

1. A printing unit having an impression cylinder and a blanket cylinder and, in order to reduce  
105 register differences when starting printing, at least one thermostatically controlled heater, which can be switched on and off, for control of the printing ink temperature, located a short way above the surface of the blanket cylinder and just upstream of the point  
110 of contact between the impression cylinder and blanket cylinder and automatic control means adapted to switch the heaters on and off for short time periods.

2. A printing unit according to claim 1 wherein the heater(s) extends over the full width of the blanket cylinder and including means to adjust its intensity over the width of the blanket cylinder.

3. A printing unit according to claim 1 and substantially as hereinbefore described with reference to the accompanying drawing.

120 4. A multi-colour printing press, including a plurality of printing units according to any preceding claim and means for varying the temperature control in the individual printing units in relation to each  
125 other.